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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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MCDERMOTT WILL & EMERY LLP
18191 VON KARMAN AVE.
SUITE 400
IRVINE, CA 92612-7107

EXAMINER	
MADAMBA, GLENFORD J	
ART UNIT	**PAPER NUMBER**
2151	

DATE MAILED: 11/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/997,839	MAHESHWARI, RAJIV	
	Examiner	Art Unit	
	Glenford Madamba	2151	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 August 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This action is in response to amendments filed on August 15, 2005.

2. Claims 1, 11, and 12 have been amended. Claims 1-12 remain pending in this application.

Response to Arguments

1. Applicant's arguments filed August 15, 2005 have been fully considered but they are not persuasive. The Office respectfully submits that Applicant has misinterpreted the prior art of record.

With regards to claims 1 and 5, Applicant argues that Riciulli does not disclose ascertaining the identity of the intervening network components in the network paths between the message source and each of the candidate overlay route processors. The Office respectfully submits that Applicant has not fully considered the disclosures by the prior art of record. Ricciulii discloses as his invention a method and apparatus for dynamically discovering and utilizing an optimized network path through overlay routing

for the transmission of data. A determination of whether to use a default network path or to instead use an alternative data forwarding path through one or more overlay nodes is based on real-time measurements of "costs" associated with the alternative paths, in response to a user request for transmission of message data to a destination on the network. Cost metrics include delay, throughput, jitter, loss, and security. The system chooses the best path among the default forwarding path and multiple alternative forwarding paths [Abstract]. In particular, Ricciulli discloses an on-demand method and system for discovering optimized paths and for the transmission of data (i.e., web page) between source and destination points on a heterogeneous, computer-based communications network along said optimized paths [col 2, lines 15-26].

In the backgound for his invention, Ricciulli discloses that typical routing protocols focus on guarantee of connection and "minimizing routing hops" rather than optimizing performance [col 1, lines 25-41]. He further discloses that alternate and improved forwarding paths through the overlay newtwork nodes are discovered on demand, along with associated cost of data transmission along a given path (i.e., delay), using conventional techniques such as "pinging" the destination of interest from the source node of interest (aka, tracerouting). The alternative paths are then compared to the existing Internet route or previously chosen overlay routes [col 4, lines 15-37]. Ricciulli also teaches that his invention finds alternate overlay forwarding paths that reduce total transmission delay, using an application that runs over User Datagram Protocol (UDP) and that the application sends test packets (such as an ICMP echo

packet) to the destination to provoke a reply and to measure round-trip delay [col 11, lines 50-65]. Ascertaining the identity of intervening network components in a network path between a source and a destination is inherent in a system that employs minimization of routing hop counts and "pinging" or trace-routing in the discovery of alternative routes. Ricciulli therefore discloses the said limitation of claim 1.

Applicant also argues that the Ricciulli prior art does not disclose the limitation of selecting alternate paths based on minimizing the number of overlapping intervening network components ....by analyzing the ascertained identities of the intervening network components. With regards to this assertion, Ricciulli, in a preferred embodiment of the invention, discloses a mechanism for finding and using alternate that are "optimized" for the transmission of data between source and destination points, and according to some cost performance, that including delay, throughput, loss, jitter, and/or security [col 2, lines 53-57] [col 3, lines 25-30] [Abstract]. Ricciulli further discloses an overlay network that includes overlay network nodes 130a-n and network nodes 140a-n (connected to the underlying network via links 145a-n) which may be nodes that may potentially be utilized in a default communication path between source node 100 and destination node 170 [Fig. 1]. Ricciulli discloses that the overlay network nodes 130a-n utilize existing network transmission lines and infrastructure, via network links 135a-n, to create a virtual topology. The overlay network preferably includes a number of computing devices such as nodes 130a-n that cooperate to provide forwarding paths overlaid over an underlying network [col 3, lines 41-58]. The existing infrastructure

includes network gateways and or routers, as disclosed by Ricciulli in Figs. 4a & 4b [also col 4, lines 15-22]. Ricciulli discloses in the background for his invention that in an Internet network routing protocols are typically minimalistic and focus on minimizing routing hops [col 1, lines 33-37]. It inherent in a system that employs minimization of hop counts for an alternate routing path with fewer intervening components (overlapping as well as non-overlapping) to be identified as the optimal path or set of paths [col 2, lines 53-57]. In addition, Ricciulli discloses a pruned overlay node topology with a reduced number or overlay nodes for determining alternate and optimized paths, as an added improvement to conventional minimization of routing paths using hop-count minimization [col 6,lines 4-65] and time-to-live (TTL) algorithms [col 6,lines 49-65]. The result yields an optimized path or set of alternate paths that are "optimized" not only by the lowest number of hop counts (i.e., intervening components such as gateways or routers along the path), but also according to some user required set of "costs" or quality of service (i.e., overall delay, jitter, loss, throughput, security, etc.). Hence, the Ricciulli prior art therefore discloses the limitation of selecting alternate paths based on minimizing the number of overlapping intervening network components ....by analyzing the ascertained identities of the intervening network components.

With further regards to claim 1, Applicant argues that the prior art does not disclose the limitation of transferring a copy of a message from the message source to each of the selected overlay route processors....wherein copies of the message from the message source are transferred to the selected overlay route processors in parallel.

In response, the Office points out that Ricciulli discloses as his invention a system that chooses the best path among the default forwarding path and multiple alternate forwarding paths [Abstract] or set of paths [col 4, lines 10-15]. He also teaches that following the detection of an improved overlay forwarding path, information describing the improved forwarding path is stored by the originator of the query and by each of the overlay nodes involved in the improved path. The path information is preferably stored at each overlay node 130 so that when given a specified destination endpoint, an overlay node on the forwarding path can retrieve the address (i.e., IP address) of the next node on the non-default path to whom the message should be forwarded [col 7, lines 29-39]. Thus, Ricciulli discloses the limitation of transferring a copy of a message from the message source to each of the selected overlay route processors....wherein copies of the message from the message source are transferred to the selected overlay route processors in parallel.

With respect to claim 2, Applicant argues that Ricciulli does not disclose the limitation of selecting a number of overlay processors with zero overlapping intervening network components in the network paths between the source and the selected overlay processors. The Office respectfully disagrees with Applicant's assertion that the limitation is not taught by the prior art. Applicant is referred to [col 7, lines 66-67] and [col 8, line 1 – col 9, line 8], wherein Ricciulli clearly discloses embodiments for a one-hop or multi-hop routing path for transmitting a message from a source to overlay network node 130a, or 130a to 130b, to destination node 170, respectively, and without

any overlapping intervening network components. As an additional supporting disclosure Applicant is also referred to [col 12, lines 45-53] wherein Ricciulli discloses transmitting the message from a source to a destination along at least one alternative path, the alternative path passing through one or more intermediate nodes not on the default path, wherein the intermediate nodes define a virtual topology on top of the computer-based communications network. Thus, the claim limitation of claim 2 is met, as currently written.

With respect to claim 3, the claim depends from claim 1 and inherits all of its claim limitations. Thus the rejection of claim 3 is maintained for at least the reasons provided above for claim 1.

With respect to claim 4, claim 4 also depends from claim 1 and inherits all of its limitations. Thus the rejection of claim 4 is maintained for at least the reasons provided above for claim 1. In addition, however, Applicant argues that Ricciulli does not teach the limitation ascertaining the identity of the intervening network components including intervening routers, switches, and firewalls. It has been shown in the previous discussion for claim 1 that Ricciulli ascertains the identity of any intervening network components along a routing path for selected overlay nodes. Ricciulli also discloses that overlay nodes may be communicatively coupled to gateways and routers and uses existing network links and interconnections (cabling) [Figs. 4a & 4b). Ricciulli therefore

discloses ascertaining the identity of the intervening network components including intervening routers, switches, and firewalls.

With regards to claim 6, Applicant argues that Ricciulli does not disclose the limitation of selecting a number of alternate paths with overlay route processors based on minimizing the number of overlapping intervening network components between the message source and the selected overlay route processors and on maximizing the transmission speed between the message source and the selected overlay route processors. As shown above for claims 1 and 5, Ricciulli discloses selecting a number of alternate paths with overlay route processors based on minimizing the number of overlapping intervening network components between the message source and the selected overlay route processors. Ricciulli further discloses maximizing transmission speed between the source and destination point by minimizing delay among the identified alternate paths [Abstract].

With respect to claim 7, the claim depends from claim 1 and inherits all of its claim limitations. Thus the rejection of claim 7 is maintained for at least the reasons provided above for claim 1. However, Applicant additionally argues that does not disclose ascertaining the IP-address identity of the intervening network components. The Office respectfully disagrees with Applicant's argument. Ricciulli clearly discloses an overlay node network in the form of a virtual topology layered on top of an underlying network, the network being an IP network [col 1, lines 12-24]. Ricciulli additionally

discloses an overlay network wherein an overlay node on the forwarding path can retrieve the address (i.e., IP address) of the next node on the non-default path to whom a copy of the message should be forwarded [col 7, lines 29-39] [col 7, lines 60-65] [col 8, line 1 – col 9, line 8].

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Riciulli, U.S. Patent 6,269,370.

3. Claim 1 discloses a method for transferring messages in a distributed communication network, wherein the distributed communication network includes a

message source coupled to a message destination by a plurality of message paths [Col 2, Lines 15-18], each of the message paths including at least one overlay route processor coupled to the message source by at least one network path, the network path including intervening network components, the method comprising: choosing a plurality of candidate overlay route processors [Col 2, Lines 28-38], ascertaining the identity of the intervening network components in the network paths between the message source and each of the candidate overlay route processors [Col 11, Lines 50-56 & 59-66; Col 4, Lines 65-77 & Col 5, Lines 1-4], selecting a plurality of selected overlay route processors from the candidate overlay route processors based on minimizing the number of overlapping intervening network components in the network paths between the message source and the selected overlay route processors [Col 6, Lines 4-65] by analyzing the ascertained identities of the intervening network components [Col 11, Lines 50-56 & 59-66; Col 4, Lines 65-77 & Col 5, Lines 1-4], and transferring a message from the message source to the selected overlay route processors along the network paths with a minimized number of overlapping intervening network components [Col 2, Lines 28-46, Col 7, Lines 10-13 & Figure 4a].

4. Claim 2 cites the method of claim 1, further comprising during the selecting step, selecting a plurality of selected overlay route processors with *zero* overlapping intervening network components in the network paths between the message source and the selected overlay route processors [Figure 1; Col 7, Lines 66-67 & Col 8, Lines 1-67 & Col 9, Lines 1-8]. As discussed by Riciulli, client node 100 can send a message to

destination node 160 via 130a, as a one-hop path. In similar fashion, any of the other overlay nodes depicted, 130b-130n, can be selected to execute the same one-hop overlay path performed by 130a for transmitting a message from source node to destination node, without having any overlapping intervening network components between them. The same principle can be applied to the multi-hop example discussed by Riciulli using pluralities of the described overlay path.

5. Claim 3 asserts the method of claim 1, wherein the choosing step includes choosing at least five candidate overlay route processors [Col 2, Lines 33-39].

6. Claim 4 stipulates the method of claim 1, wherein the ascertaining step includes ascertaining the identity of intervening network components including intervening routers, intervening switches and intervening firewalls [Col 5, Lines 21-38].

7. Claim 5 states the method of claim 1, wherein the selecting of a plurality of selected overlay route processors from the plurality of candidate overlay route processors is based initially on minimizing the number of overlapping intervening network components in the network paths between the message source and the selected overlay route processors and then based on minimizing the number of intervening network components [Col 6, Lines 4-65].

8. Claim 6 asserts the method of claim 1, wherein the selecting of a plurality of selected overlay route processors from the plurality of candidate overlay route processors is based initially on minimizing the number of overlapping intervening network components in the network paths between the message source and the selected overlay route processors [Col 6, Lines 4-65] and then based on maximizing the transmission speed between the message source and the selected overlay route processors [Col 11, Lines 50-52].

9. Claim 7 states the method of claim 1, wherein the ascertaining step includes ascertaining the IP-address identity of the intervening network components [Col 5, Lines 30-35 & Col 7, Lines 58-65].

10. Claim 8 notes the method of claim 7, wherein the ascertaining step uses a series of User Datagram Protocol (UDP) packets [Col 11, Lines 50-56].

11. Claim 9 points to the method of claim 7, wherein the ascertaining step uses a series of Internet Control Message Protocol (ICMP) packets [Col 11, Lines 59-66].

12. Claim 10 references the method of claim 1, further comprising during the transferring step, transferring a message from a connector message source **100** (Figure 1) [Col 4, Lines 16-22].

13. Claim 11 discloses a method for transferring messages in a distributed communication network, wherein the distributed communication network includes a connector message source (source node **100**) coupled to a connector message destination (destination node **160**) by a plurality of message paths [Col 2, Lines 15-18], each of the message paths including at least one overlay route processor coupled to the message source by at least one network path, the network path including intervening network components, the method comprising: choosing a plurality of candidate overlay route processors [Col 2, Lines 28-38], ascertaining the IP-address identity of the intervening network components in the network paths between the connector message source and each of the candidate overlay route processors [Col 5, Lines 30-35 & Col 7, Lines 58-65], selecting two selected overlay route processors from the plurality of candidate overlay route processors based on minimizing the number of overlapping intervening network components in the network paths between the connector message source and the two selected overlay route processors [Col 6, Lines 4-65] by analyzing the ascertained IP-address identities of the intervening network components , and transferring a message from the connector message source to the two selected overlay route processors along the network paths with a minimized number of overlapping intervening network components [Col 2, Lines 28-46, Col 7, Lines 10-13 & Figure 4a].

14. Claim 12 states the method of claim 11, further comprising during the selecting step, selecting two selected overlay route processors with zero overlapping intervening

network components in the network paths between the connector message source and the two selected overlay route processors [refer to #4 as discussed for Claim 2].

Conclusion

1. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

1. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Glenford Madamba whose telephone number is 571-272-7989. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zarni Maung can be reached on 571-272-3932. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Patrice Winder

PATRICE WINDER
PRIMARY EXAMINER

Glenford Madamba
Examiner
Art Unit 2151